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REMARKS

Claims 1-29 are all the claims pending in the application. Claims 1-7 and 15-29 are allowed. Claims 8 and 12-14 stand rejected under 35 U.S.C. 103(a) as being unpatentable over Achuthan et al., hereinafter "Achuthan" (6,756,643) in view of Hill (6,787,406). Applicants respectfully traverse this rejection based on the following discussion.

Applicants traverse this rejection because Achuthan and Hill are not legally combinable and there is no teaching in the prior art of the claimed structure where the "second fin structure comprising doped silicon" as defined by independent claim 8. As explained in greater detail below, in Achuthan the second fin is a dummy fin. Making the dummy fin out of doped silicon would increase the cost of the structure, without producing any benefit. Therefore, there is only motivation to not make the structure doped in Achuthan, because to do so would lower the cost of production. To the contrary, the modification of Achuthan proposed in the Office Action actually increases the cost of production and one ordinarily skilled in the art would not have been motivated to make the proposed modification.

More specifically, the claimed second fin is an active part of the FinFET structure in the claimed invention and is, therefore, a conductor or semiconductor. Thus, the claimed second fin comprises some form of doped silicon. To the contrary, the second fin in Achuthan is an insulator (dummy structure). The Office Action argues that Hill discloses doped silicon fins and that the doped silicon fin of Hill could be substituted in place of the insulator fin of Achuthan; however, there is no statement of motivation in the rejection (or any other motivation in the prior art of record) as to why one ordinarily skilled in the art would have substituted a doped silicon fin for the insulator fin disclosed in Achuthan. To the contrary, doing so only increases the cost of the structure, without producing any benefit. Therefore, it is Applicants' position that the second fin in Achuthan would not comprise the claimed second fin that "comprises doped silicon" because Achuthan would not have been so modified, there being no motivation to do so.

Achuthan explains that FIG. 8 is a cross-sectional diagram illustrating dummy fins. FIG. 8 of Achuthan is generally similar to the cross-section shown in FIG. 4 of Achuthan, except in FIG. 8 of Achuthan, dummy fins 801 and 802 have been formed next to the actual fin 810.

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Dummy fins 801 and 802 in Achuthan do not play a role in the final operation of the FinFET. However, by placing fins 801 and 802 next to fin 810 in Achuthan, gate material layer 820 may form a more uniform distribution when it is initially deposited. That is, dummy fins 801 and 802 in Achuthan cause the low point in layer 820 to be higher in the areas adjacent fin 810 than if dummy fins 801 and 802 were not present. Thus, in the implementation shown in FIG. 8 of Achuthan, layer 820 starts off more uniform than without dummy fins 801 and 802. This can lead to better uniformity after planarization (see column 5, lines 10-23 of Achuthan).

In other words, Achuthan only uses the secondary fins 801, 802 as structural features to form a more uniform distribution of the gate conductor. Nowhere does Achuthan suggest that these features should be doped in any way so as to become part of the active structure of the transistor. Indeed, doing so only increases the cost of the structure, without producing any benefit. These "dummy" structures 801, 802 in Achuthan are only used for physical support/deformation of the later formed gate conductor and are explicitly not used as part of the active structure where Achuthan states that the "Dummy fins 801 and 802 do not play a role in the final operation of the FinFET" (column 5, lines 14-15). Since these dummy structures 801, 802 do not play a role in the operation of the transistor, they would only be formed of insulators and would not be formed of the more expensive and more complex doped silicon of the claimed structure. To form the dummy structures 801, 802 in Achuthan of the more expensive doped silicon materials would increase the cost of the structure, without producing any benefit. Therefore, there would not be motivation to change the insulator structures 801, 802 in Achuthan into any form of doped silicon structure.

With the claimed invention, both fins are doped. Those fins that have spacers will receive a smaller area of active doping and those fins that do not have spacers will receive a larger area of active doping. Therefore, there is a difference in doping between the first fins and the second fins that is caused by the spacers. The difference in doping between the first fins and the second fins changes an effective width of the second fins when compared to the first fins without having to use the fins of different physical widths or use multiple fins within each transistor, as is required conventionally.

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Thus, Applicants respectfully submit that independent claim 8 is patentable over Achuthan and Hill because Achuthan would not have been modified as proposed. Therefore, the prior art of record does not teach or suggest the "second fin structure comprising doped silicon" because the second fin in Achuthan is not an active part of the transistor structure. Further, dependent claims 12-14 are also patentable, not only because they depend from a patentable claim, but also because of the additional features of the invention they define.


In view of the foregoing, Applicants submit that claims 1-28, all the claims presently pending in the application, are patentably distinct from the prior art of record and are in condition for allowance. The Examiner is respectfully requested to pass the above application to issue at the earliest possible time.

Should the Examiner find the application to be other than in condition for allowance, the Examiner is requested to contact the undersigned at the local telephone number listed below to discuss any other changes deemed necessary.

Please charge any deficiencies and credit any overpayments to Attorney's Deposit Account Number 09-0456.

Respectfully submitted,

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